# "WHAT A WONDERFUL WORLD" More (Green) Chips for Less $CO_2$

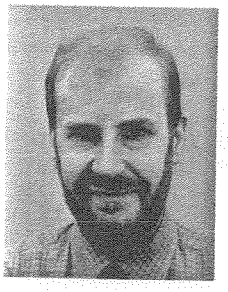
Wouldn't it be wonderful to enjoy all conveniences of our modern life while having neither energy consumption nor $CO_2$ emission? – Green chips may surely are a step on the way towards it.



**Piet Demeester, Ghent University**

## ICT: A Big Energy Consumer

Computers, televisions, internet, mobile phones and many more information and communication technologies (ICT) and devices have become an essential part of our lives. A major challenge for the coming decades is the operation of all this ICT equipment in a sustainable way. Today the operation of ICT equipment is responsible for about 2% of the total energy consumption worldwide, not including the energy consumption during the manufacturing and the disposal phase. Effort in different directions started to reduce this energy footprint of ICT. Examples are energy efficient servers and cooling solutions, advanced (optical and wireless) networking technologies, energy optimized content and application management, etc. Of course ICT is also an enabler against the depletion of natural resources and global warming (e.g. teleconferencing, building automation, intelligent transport systems, process control and many more). This talk will primarily focus on the energy consumption of ICT.



**Piet Demeester**
Department of Information Technology
Ghent University

Dr. Piet Demeester received his Ph.D. degree (1988) at Ghent University, where he became professor in 1993. He is heading a research group with over 100 members (www.ibcn.intec.ugent.be). His current research interests include: multilayer networks, Quality of Service (QoS), mobile and sensor networks, access networks, grid computing, energy efficient ICT, distributed software, network and service management, techno-economics and applications. He is co-author of over 700 publications in international journals or conference proceedings and received multiple scientific awards. He is member of the management board of IBBT (www.ibbt.be) and heading the iLab.t infrastructure lab (ilabt.ibbt.be).

**Thursday, Dec. 11, 2008**
**4:30 pm – 5:00 pm**
**Saal 1**

**Gerhard Fettweis, Technical University of Dresden**

## How to Design Really Low-Power Cellular Systems

Chipset design for cellular communications has a long tradition of creating low-power system solutions for handsets. As the energy cost for running the infrastructure network is increasing dramatically, new total system solutions are necessary. How can we design from gate to chip to network element to system solutions? A set of new approaches and challenges shall be addressed, paving the path for a complete new design methodology for future "cool silicon".

**Gerhard Fettweis**
Head of the Vodafone Chair
Mobile Communications Systems
Technical University of Dresden

Dr. Gerhard Fettweis studied Electrical Engineering at the University of Technology (RWTH) Aachen and earned his Ph.D. degree at the same university in 1990. From 1990 to 1991, he was Visiting Scientist at the IBM Almaden Research Center in San Jose, CA, developing signal processing innovations for IBM's disk drive products. From 1991 to 1994, he was a Scientist with TCSI Inc., Berkeley, CA, responsible for signal processor development projects for cellular phone chip-sets. Since 1994 he holds the Vodafone Chair at the Technical University of Dresden, Germany. During this time, next to producing scientific innovations, he has founded six start-ups: Systemonic (today NXP Semiconductors), Radioplan (today Actix), Signalion, InCircuit, Dresden Silicon (today Signalion), and Freedelity.

Dr. Fettweis is an active member of the scientific community in general, also organizing conferences (e.g. TPC Chair of ICC 2009) and research projects. His research focuses on new wireless communications, systems for cellular and short range networks, and hardware/software implementation architectures.

**Thursday, Dec. 11, 2008**
**5:00 pm – 5:30 pm**
**Saal 1**

# edaForum08 Program

Company Presentations Thursday, December 11, 2008

1st day: Thursday, December 11, 2008
2nd day: Friday, Decenber 12, 2008

## Welcome Address

| | | |
|---|---|---|
| 1:15 pm | **Wolfgang Rosenstiel**<br>**edacentrum** | |

## General Keynote

| | | |
|---|---|---|
| 1:30 pm | **Simon Yang,**<br>**Chief Technology Officer**<br>**Senior VP for Fab Operations**<br>**Chartered Semiconductor Manufacturing** | **"Design and Process Interactions at the 32nm Node and Virtual IDM Environment"**<br>> Abstract and Bio |

## Technical Session I (parallel to Business Session I)
## "WHAT A WONDERFUL WORLD"
## More (Green) Chips for Less CO2

| | | |
|---|---|---|
| 2:35 pm | **Gerhard Fettweis**<br>**Technical University of Dresden:** | **"How to Design Really Low-Power Cellular Systems"**<br>> Abstract and Bio |
| 3:20 pm | Coffee Break | |
| 4:00 pm | Keynote:<br>**Gerd Teepe**<br>**AMD Saxony:** | **"Performance per Watt – Mission for Architecture and Design in Computing"**<br>> Abstract and Bio |
| 4:45 pm | **Volker Kiefer**<br>**Qimonda:** | **"Energy Efficiency in DRAM"**<br>> Abstract and Bio |
| 5:15 pm | **Piet Demeester**<br>**Ghent University:** | **"ICT: A Big Energy Consumer"**<br>> Abstract and Bio |

## Business Session I (parallel to Technical Session I)
## "GO YOUR OWN WAY"
## More Than Moore and Less More Moore for commercial success

| | | |
|---|---|---|
| 2:35 pm | Keynote:<br>**Pietro Perlo**<br>**Fiat:** | **"Energy Savings by Essential System Integration in the Forthcoming E-Mobility"**<br>> Abstract and Bio |
| 3:20 pm | Coffee Break | |
| 4:00 pm | **Claudio Contiero**<br>**STMicroelectronics:** | **"Progress and Challenges in Semiconductor Mixed Technologies for Smart Power Applications"**<br>> Abstract and Bio |
| 4:30 pm | **Stephan Guttowski**<br>**Fraunhofer IZM:** | **"Technology Aware Modelling for Automation in Physical Design of Heterogeneous Systems"**<br>> Abstract and Bio |
| 5:00 pm | **Christian Sebeke**<br>**Bosch:** | **"As good as it gets - How much more EDA needs "More than Moore"?"** |

> Abstract and Bio

5:30 pm Break
5:45 pm

**Social Event**

7:00 pm **Baroque Dinner** > Details

**Second Day:**

**Friday Keynote**

8:45 am **Daniel D. Gajski, University of California at Irvine:** **"New Strategies for System Design"**
> Abstract and Bio

**Technical Session II (parallel to Business Session II)**
**"IT'S MY LIFE"**
**More (Robust) Chips for no Failures During Lifetime**

9:35 am Keynote: **Subhasish Mitra, Stanford University:** **"Globally Optimized Robust System Design"**
> Abstract and Bio

10:20 am Coffee Break

10:50 am **Alison Burdett, Toumaz Technology:** **"The SensiumTM: Designing a Robust and Reliable Ultra-Low Power System-on-Chip for Wireless Medical Monitoring"**
> Abstract and Bio

11:20 am **Christoph Heer, Infineon:** **"Future Robust Systems Require Holistic Approaches Combining Hardware and Software Concepts"**
> Abstract and Bio

**Business Session II (parallel to Technical Session II)**
**"LET'S TWIST AGAIN"**
**More Future in Microelectronics**

9:35 am Keynote: **Brian Matas, IC Insights:** **"IC Industry Review and Forecast — Light at the End of the Tunnel"**
> Abstract and Bio

10:20 am Coffee Break

10:50 am **Barbara Schaden, Infineon:** **"How About the Linkage Between Microelectronics and Global Economy?"**
> Abstract and Bio

11:20 am **Ulrich Schaefer, Bosch:** **"Limits to IC Market Development: Product Development"**
> Abstract and Bio

**Panel Discussion**

11:55 am **Moderator: Peggy Aycinena, EDA Confidential** **"More EDA for a Better Future in Microelectronics"**
> Panel abstract and Moderator's Bio

**Closing Words**

12:55 pm **Erich Barke, edacentrum**

13:00 pm Lunch

## Trips and Tours

**2:30 pm - 5.00 pm** > Details

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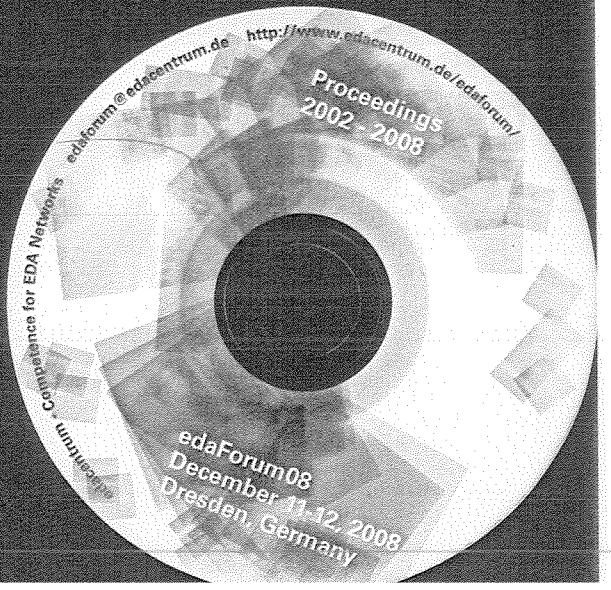
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